

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
COMMON MULTIPLE CONNECTOR, ITEM 330 ----- SV778872-26 (1)	2/2	330FM01 External leakage, coupled, oxygen. Failure, coupling O- seal bypass leakage. DCM/SCU interface O- seal bypass leakage.	END ITEM: Leakage of vehicle O2 supply to ambient. GFE INTERFACE: Unable to charge the PLSS primary O2 bottles (111) if the leakage is excessive. Excessive consumption of vehicle oxygen. MISSION: Terminate EVA. Unable to charge and use one EMU. CREW/VEHICLE: None. TIME TO EFFECT /ACTIONS: Seconds. TIME AVAILABLE: N/A TIME REQUIRED: N/A REDUNDANCY SCREENS: A-N/A B-N/A C-N/A	A. Design - The DCM oxygen supply coupling has three external leakage paths when coupled. One path is blocked by a single static radial O-ring. The second path is blocked by a face seal and the third external leakage path contains a radial O-ring and backup ring combination which slide axially along a sealing surface provided by the SCU plunger during coupling and uncoupling. The O-ring design configuration, dimensions and rigidness of assembly provide squeeze under all loading conditions. B. Test - Component Acceptance: A coupled external oxygen leakage test is performed per Air-Lock Inc. ATP 9619-11. For the leakage test, the SCU and DCM halves are pressurized to 1005+32-0 psig, leakage cannot exceed 5.0 SCC/hr N2. PDA: No external leakage test performed while coupled. An uncoupled external leakage test is performed per SEMU-60-015, paragraph 10.0. The O2 pressure port is pressurized on the DCM side to 1065-1115 psia and a leakage rate requirement of 1.0 scc/min. O2 max is verified. REF EC 163402-592. Certification: Certified for a useful life of 15 years. C. Inspection - Air-Lock Inc. visually inspects the DCM half at final inspection. H.S. source inspection visually inspects the DCM half at final inspection. D. Failure History - H-EMU-330-C004 (8/27/93) - The O2 port exhibited excessive leakage while mated at 6700 cert. operational cycles (15 yrs. spec. cycles: 7,900) due to a faulty o-ring. The testing was continued with a new o-ring and at the end of the 10,200 cycles required for 20 yr. cert., particle generation was discovered between the Inconel poppet DCM/SCU housing interface. Op sheets have been revised to have sufficient braycote for dynamic o-seal application to prevent leakage. SCU/DCM housings have been changed to Nitronics 60 to prevent galling. E. Ground Turnaround - Tested for non-EET processing per FEMU-R-001, V1103.02 Orbiter Check. FEMU-R-001 Para 8.2 EMU Preflight KSC Checkout for EET processing. F. Operational Use - Crew Response - Pre/PostEVA: If leakage minor, use airlock panel O2 valve to isolate leak. If leakage major and EMU O2 recharge required, terminate EVA operations if recharge not possible. Special Training - Standard EMU training covers this failure mode. Operational Considerations - EVA checklist procedures verify hardware integrity and systems operational status prior to EVA. Flight rules define go/no go criteria related to EMU pressure regulation.

EXTRAVEHICULAR MOBILITY UNIT
SYSTEMS SAFETY REVIEW PANEL REVIEW
FOR THE
I-330 COMMON MULTIPLE CONNECTOR
CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

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